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(54) **NORMAL METAL BOUNDARY CONDITIONS FOR MULTI-LAYER TES DETECTORS**

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(57) **ABSTRACT**

Multi-layer transition-edge sensors (TES) having improved performance, a method for preparing them and methods of using them. Specifically, the improvement lies in providing normal metal strips along the edges of the superconducting and normal metal layers parallel to the current flow in the TES during operation. These strips (referred to as "banks") provide for both improved detector performance and improved detector robustness against corrosion. This improvement is an important advance particularly for TES-based microcalorimeter detectors. The improved TESs also have many other applications based on the very precise thermometer function achieved by the TES.

37 Claims, 4 Drawing Sheets